

PROCEEDINGS  
OF THE  
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*GLYPHANODINIUM*, A NEW DINOFLAGELLATE  
GENUS FROM THE PALEOCENE OF CALIFORNIA

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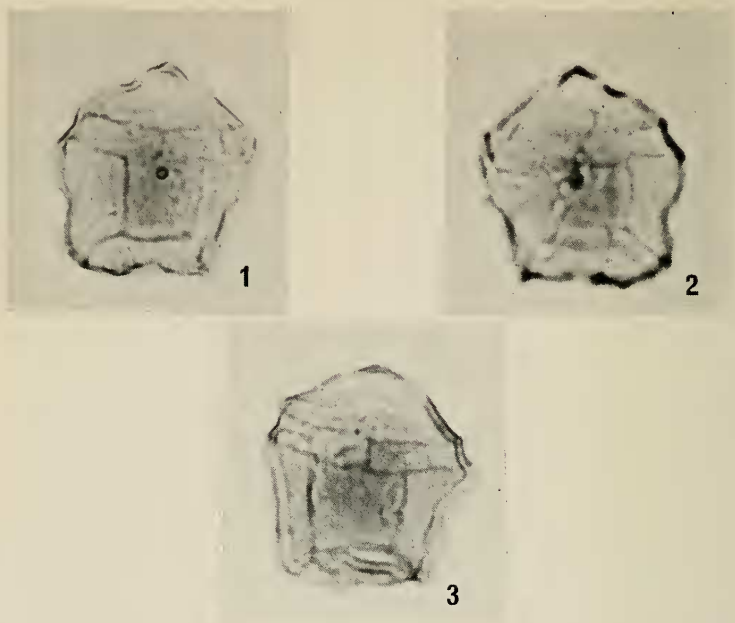
During the course of a palynological investigation of the Dos Palos Shale Member of the Moreno Formation a distinctive dinoflagellate was found to occur in fair abundance. Specimens were obtained from two core holes at Escarpado Canyon in the Panoche Hills, Fresno Co., California. The stratigraphic level of occurrence is in the Dos Palos Shale 95 to 125 feet below the base of the overlying Lodo Formation. A single additional specimen was found 750 feet below the Lodo (330 feet below the Cima sand lentil). Payne (1951: 11) suggested that the Dos Palos Shale is of Paleocene age. Loeblich (1958: 2260) demonstrated on the basis of planktonic Foraminifera that it represents the Danian Stage of the Paleocene.

**Glyphanodinium**, new genus

*Type species: Glyphanodinium facetum*, new species.

*Diagnosis:* Test small, angular, five-sided in outline. A transverse furrow divides the test into a small epitheca and a relatively large hypotheca. A longitudinal furrow interrupts the girdle and extends onto both the epitheca and hypotheca. Ventral side of test flat to concave. Dorsal hypotheca is chisel-shaped at the antapex. Tabulation: one (?) apical plate, five precingular plates, six girdle plates, six postcingular plates, one posterior ventral plate, one posterior intercalary plate, and one antapical plate. The test opens by detachment of the apical plate.

*Comment:* This genus is assignable to the order Peridiniales of the class Dinophyceae. It resembles the genera *Lithodinia* Eisenack 1935, *Microdinium* Cookson and Eisenack 1960, and *Cunninginopsis* Cookson and Eisenack 1962, to the extent that all are tabulated, possess apical archeopyles, and presumably represent motile stages. Of the three genera it bears the closest resemblance to *Microdinium* in that both are small and possess girdles located relatively high on the test. They



FIGS. 1-3. *Glyphanodinium facetum*, n. gen., n. sp., Danian, Dos Palos Shale, Fresno Co., California. 1, Holotype, dorsal view; 2, same, ventral view; 3, paratype, dorsal view. All unretouched photographs,  $\times 1000$ .

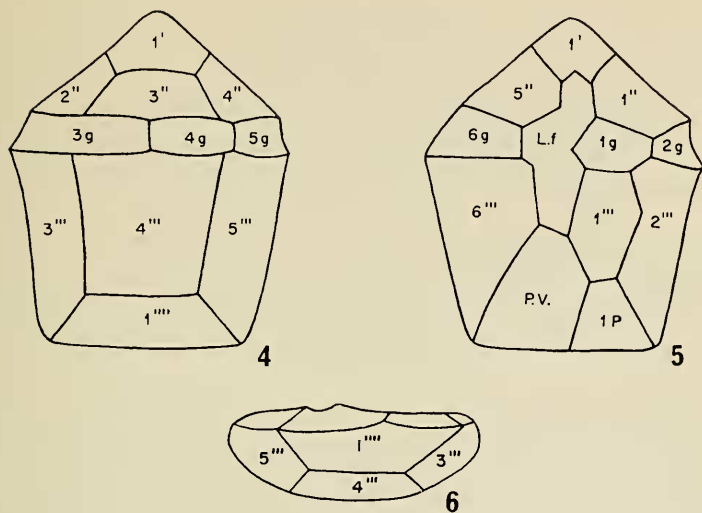
differ in tabulation and in the form of the test. *Glyphanodinium* bears a superficial resemblance to *Phanerodinium* Deflandre, 1937, but differs in tabulation and archeopyle position.

***Glyphanodinium facetum*, new species**  
(Figs. 1-6)

*Holotype*: California Research Corporation Cat. No. 16626, 75-85(3).  
*Paratype*: California Research Corporation Cat. No. 16626, 85-95(3).

*Age and occurrence*: Danian. Dos Palos Shale Member of the Moreno Formation; Sec. 7 & 8, T. 15 S., R. 12 E., M.D.M., Fresno Co., California.

*Diagnosis*: Same as for the genus with the following additional remarks. The girdle is circular. The slightly sunken longitudinal furrow is displaced a little to the left at the point where it crosses the transverse furrow but the portions above and below the girdle are in alignment. The tabulation of the hypotheca is distinct but that of the epitheca is less easily discernible. The archeopyle operculum is very small and difficult to interpret because the flattened test does not commonly assume



FIGS. 4-6. *Glyphanodinium facetum*, n. gen., n. sp., diagrams to show plate arrangement,  $\times 1500$ . 4, Dorsal view; 5, ventral view; 6, antapical view.

a vertical orientation. The epitheca is in the form of a dorsoventrally flattened cone. The hypotheca is chisel-shaped with the ventral side flat or slightly concave. The dorsal side exhibits a flat central plate (4''') with the lateral plates (3''', 5''') and the antapical plate (1''') each angled downward from the plane of the central plate. A cross section through the hypotheca is in the form of an isosceles trapezoid, the longer of the parallel sides being the ventral side. A section through the girdle area has a flattened reniform shape, the concave side being ventral. The test membrane is thin, single-layered, translucent. It can be seen to be faintly punctate when observed under high magnification. The sutures are only slightly raised above the surface of the test on the hypotheca and are flush on the epitheca.

*Dimensions:* Holotype— $28 \mu$  high,  $26 \mu$  broad. Size range 27 to  $32 \mu$  high with operculum in place, 22 to  $27 \mu$  without operculum; 20 to  $25 \mu$  broad. Thickness front to back ca.  $9 \mu$ . Seventy-five specimens located and examined.

*Comment:* Because of the small size of this species, it is inconspicuous in strewn slides. The brownish color, which resembles that of cuticular debris, adds to the difficulty of locating specimens.

LITERATURE CITED

- LOEBLICH, A. R., JR. 1958. Danian Stage of Paleocene in California. *Bull. Am. Assoc. Petroleum Geologists*, 42: 2260-2261.
- PAYNE, M. B. 1951. Type Moreno Formation and overlying Eocene strata on the west side of the San Joaquin Valley, Fresno and Merced Counties, California. *Calif. Div. Mines, Spec. Rept.*, 9: 3-29.